

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): An ultrasonic diagnostic equipment comprising:  
a transmission ultrasonic wave generation unit which generates a transmission ultrasonic wave that has, at least, a first ~~fundamental-wave~~ frequency component, and a second ~~fundamental-wave~~ frequency component at a frequency higher than that of the first ~~fundamental-wave~~ frequency component, and which generates the transmission ultrasonic wave by controlling the frequency of at least one of the first and second ~~fundamental-waves~~ in order frequency components so that, in a case of transmitting the transmission ultrasonic wave to a patient and receiving a reflected wave therefrom, a difference frequency component between the first ~~fundamental-wave~~ frequency component and the second ~~fundamental-wave~~ frequency component as is included in the reflected wave may interact with a second harmonic wave of the first ~~fundamental-wave~~ frequency component, and also by controlling a phase of at least one of the first and second ~~fundamental-waves~~ in order difference between the first frequency component and the second frequency component to control the interaction;

a transmission unit which transmits the transmission ultrasonic wave including the first frequency component and the second frequency component to the patient;

a reception unit which receives the reflected wave of the transmission ultrasonic wave from the patient; and

an image generation unit which generates an ultrasonic image on the basis of the reflected wave.

Claim 2 (Currently Amended): An ultrasonic diagnostic equipment as defined in claim 1,

wherein said transmission ultrasonic wave generation unit generates the transmission ultrasonic wave by controlling the phase of at least one of the first and second ~~fundamental waves in order~~ frequency components so that the second harmonic wave and the difference frequency component may become ~~in phase~~ in phase.

Claim 3 (Currently Amended): An ultrasonic diagnostic equipment as defined in claim 2,

wherein said transmission ultrasonic wave generation unit:

sets a phase difference of the second ~~fundamental wave~~ frequency component relative to the first ~~fundamental wave~~ frequency component, at  $\pi$  in a case where the first ~~fundamental wave~~ frequency component and the second ~~fundamental wave~~ frequency component are of sine type; and

sets a phase difference of the second ~~fundamental wave~~ frequency component relative to the first ~~fundamental wave~~ frequency component, at 0 or  $2\pi$  in a case where the first ~~fundamental wave~~ frequency component and the second ~~fundamental wave~~ frequency component are of cosine type.

Claim 4 (Currently Amended): An ultrasonic diagnostic equipment as defined in claim 1,

wherein said transmission ultrasonic wave generation unit generates the transmission ultrasonic wave by controlling the phase of at least one of the first and second ~~fundamental wave in order~~ frequency components so that the second harmonic wave and the difference frequency component may become opposite phases.

Claim 5 (Currently Amended): An ultrasonic diagnostic equipment as defined in claim 4,

wherein said transmission ultrasonic wave generation unit:

sets a phase difference of the second ~~fundamental-wave~~ frequency component relative to the first ~~fundamental-wave~~ frequency component, at 0 or  $2\pi$  in a case where the first ~~fundamental-wave~~ frequency component and the second ~~fundamental-wave~~ frequency component are of sine type; and

sets a phase difference of the second ~~fundamental-wave~~ frequency component relative to the first ~~fundamental-wave~~ frequency component, at  $\pi$  in a case where the first ~~fundamental-wave~~ frequency component and the second ~~fundamental-wave~~ frequency component are of cosine type.

Claim 6 (Currently Amended): An ultrasonic diagnostic equipment as defined in claim 1,

wherein said transmission ultrasonic wave generation unit controls the frequency of the second ~~fundamental-wave~~ frequency component to be lower than triple the frequency of the first ~~fundamental-wave~~ frequency component, ~~in order so~~ that the difference frequency component may be superposed on the second harmonic wave on a lower frequency side of the second harmonic wave.

Claim 7 (Currently Amended): An ultrasonic diagnostic equipment as defined in claim 1,

wherein said transmission ultrasonic wave generation unit controls the frequency of the second ~~fundamental-wave~~ frequency component to be, at least, equal to triple the frequency of the first ~~fundamental-wave~~ frequency component, ~~in order so~~ that the difference

frequency component may be superposed on the second harmonic wave on a higher frequency side of the second harmonic wave.

Claim 8 (Currently Amended): An ultrasonic diagnostic equipment as defined in claim 1,

wherein said transmission ultrasonic wave generation unit generates the transmission ultrasonic wave by controlling the phase of the second ~~fundamental wave in order~~ frequency component so that the difference frequency component may be superposed on the second harmonic wave on a lower frequency side and a higher frequency side of the second harmonic wave.

Claim 9 (Withdrawn): An ultrasonic diagnostic equipment comprising:

a transmission ultrasonic wave generation unit which generates a transmission ultrasonic wave that has, at least, a first fundamental wave, and a second fundamental wave at a frequency higher than that of the first fundamental wave, and which generates the transmission ultrasonic wave by controlling the frequency of at least one of the first and second fundamental waves in order that, in case of transmitting the transmission ultrasonic wave to a patient and receiving a reflected wave therefrom, a sum frequency component between the first fundamental wave and the second fundamental wave as is included in the reflected wave may interact with at least one of a second harmonic wave of the first fundamental wave and a second harmonic wave of the second fundamental wave, and also by controlling a phase of at least one of the first and second fundamental waves in order to control the interaction;

a transmission unit which transmits the transmission ultrasonic wave to the patient;

a reception unit which receives the reflected wave of the transmission ultrasonic wave from the patient; and

an image generation unit which generates an ultrasonic image on the basis of the reflected wave.

Claim 10 (Withdrawn): An ultrasonic diagnostic equipment as defined in claim 9, wherein said transmission ultrasonic wave generation unit generates the transmission ultrasonic wave by controlling the phase of at least one of the first and second fundamental waves in order that the second harmonic wave and the sum frequency component may become inphase.

Claim 11 (Withdrawn): An ultrasonic diagnostic equipment as defined in claim 10, wherein said transmission ultrasonic wave generation unit sets a phase difference of the second fundamental wave relative to the first fundamental wave, at  $\pi$  in a case where the first fundamental wave and the second fundamental wave are of sine type; and sets a phase difference of the second fundamental wave relative to the first fundamental wave, at 0 or  $\pi$  in a case where the first fundamental wave and the second fundamental wave are of cosine type.

Claim 12 (Withdrawn): An ultrasonic diagnostic equipment as defined in claim 9, wherein said transmission ultrasonic wave generation unit generates the transmission ultrasonic wave by controlling the phase of at least one of the first and second fundamental waves in order that the second harmonic wave and the difference frequency component may become opposite phases.

Claim 13 (Withdrawn): An ultrasonic diagnostic equipment as defined in claim 12, wherein said transmission ultrasonic wave generation unit

sets a phase difference of the second fundamental wave relative to the first fundamental wave, at 0 or  $2\pi$  in a case where the first fundamental wave and the second fundamental wave are of sine type; and

sets a phase difference of the second fundamental wave relative to the first fundamental wave, at  $\pi$  in a case where the first fundamental wave and the second fundamental wave are of cosine type.

Claim 14 (Withdrawn): An ultrasonic diagnostic equipment comprising:

a transmission ultrasonic wave generation unit which generates a transmission ultrasonic wave that has, at least, a first fundamental wave, and a second fundamental wave at a frequency higher than that of the first fundamental wave, and which generates the transmission ultrasonic wave by controlling a phase of at least the second fundamental wave in order that, in case of transmitting the transmission ultrasonic wave to a patient and receiving a reflected wave therefrom, a difference frequency component or a sum frequency component between the first fundamental wave and the second fundamental wave as is included in the reflected wave may cancel leakage of at least one of the first and second fundamental waves;

a transmission unit which transmits the transmission ultrasonic wave to the patient;

a reception unit which receives the reflected wave of the transmission ultrasonic wave from the patient; and

an image generation unit which generates an ultrasonic image on the basis of the reflected wave.

Claim 15 (Withdrawn): An ultrasonic diagnostic equipment as defined in claim 14, wherein:

said transmission unit transmits the transmission ultrasonic wave at, at least, 2 rates;

said reception unit receives from the patient the reflected waves of the individual transmission ultrasonic waves transmitted at, at least, 2 rates, and performs subtraction processing between the different rates; and

said image generation unit generates the ultrasonic image on the basis of the reflected waves subjected to the subtraction processing.

Claim 16 (Withdrawn): An ultrasonic diagnostic equipment as defined in claim 14, wherein:

said transmission unit transmits the transmission ultrasonic wave a plurality of times for a single scanning line;

said reception unit receives a plurality of reflected waves corresponding to the individual transmission ultrasonic waves; and

said image generation unit includes an extraction unit which extracts the second harmonic wave and the difference frequency component from each of the plurality of reflected waves.

Claim 17 (Withdrawn): An ultrasonic diagnostic equipment as defined in claim 16, wherein:

said image generation unit includes a Doppler processing unit which generates a blood flow image on the basis of the second harmonic wave and the difference frequency component extracted every reflected wave.

Claim 18 (Currently Amended): An ultrasonic image generation method comprising:  
generating a transmission ultrasonic wave that has, at least, a first ~~fundamental wave~~  
frequency component, and a second ~~first fundamental wave~~ frequency component, by  
controlling the frequency of at least one of the first and second ~~fundamental wave in order~~  
frequency components so that, in a case of transmitting the transmission ultrasonic wave to a  
patient and receiving a reflected wave therefrom, a difference frequency component between  
the first ~~fundamental wave~~ frequency component and the second ~~fundamental wave~~  
frequency component as is included in the reflected wave may interact with a second  
harmonic wave of the first ~~fundamental wave~~ frequency component, and also by controlling a  
phase difference between the first frequency component and the second frequency component  
~~of at least one of the first and second fundamental wave in order~~ to control the interaction;  
transmitting the transmission ultrasonic wave to the patient;  
receiving the reflected wave of the transmission ultrasonic wave from the patient; and  
generating an ultrasonic image on the basis of the reflected wave.

Claim 19 (Withdrawn): An ultrasonic image generation method comprising:  
generating a transmission ultrasonic wave that has, at least, a first fundamental wave,  
and a second fundamental wave at a frequency higher than that of the first fundamental wave,  
by controlling the frequency of at least one of the first and second fundamental waves in  
order that, in case of transmitting the transmission ultrasonic wave to a patient and receiving  
a reflected wave therefrom, a sum frequency component between the first fundamental wave  
and the second fundamental wave as is included in the reflected wave may interact with at  
least one of a second harmonic wave of the first fundamental wave and a second harmonic



wave of the second fundamental wave, and also by controlling a phase of at least one of the first and second fundamental waves in order to control the interaction;

transmitting the transmission ultrasonic wave to the patient;

receiving the reflected wave of the transmission ultrasonic wave from the patient; and

generating an ultrasonic image on the basis of the reflected wave.

Claim 20 (Withdrawn): An ultrasonic image generation method comprising:

generating a transmission ultrasonic wave that has, at least, a first fundamental wave, and a second fundamental wave at a frequency higher than that of the first fundamental wave, by controlling a phase of at least the second fundamental wave in order that, in case of transmitting the transmission ultrasonic wave to a patient and receiving a reflected wave therefrom, a difference frequency component or a sum frequency component between the first fundamental wave and the second fundamental wave as is included in the reflected wave may cancel leakage of at least one of the first and second fundamental waves;

transmitting the transmission ultrasonic wave to the patient;

receiving the reflected wave of the transmission ultrasonic wave from the patient; and

generating an ultrasonic image on the basis of the reflected wave.

IN THE DRAWINGS

The attached sheets of drawings include changes to Figs. 2B, 3, 4B, 4C, 13 and 16C. These sheets, which include Figs. 2B, 3, 4B, 4C, 13 and 16C, replaces the original sheets including Figs. 2B, 3, 4B, 4C, 13 and 16C.

Attachment: Replacement Sheets